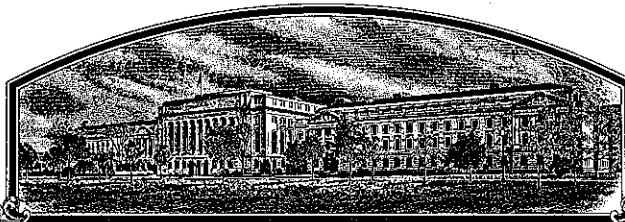


No.

8900112



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**Pioneer Hi-Bred International, Inc.**

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT, 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'2548'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 30th day of November in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

*Kenneth H. Evans*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Edward Madison*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) Pioneer Hi-Bred International, Inc. Plant Breeding Division		2. TEMPORARY DESIGNATION W0030E	3. VARIETY NAME 2548
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 7301 N.W. 62nd Ave., P.O. Box 85 Johnston, IA 50131-0085		5. PHONE (Include area code) 515/270-3311	FOR OFFICIAL USE ONLY PVPO NUMBER 8900112
6. GENUS AND SPECIES NAME <u>Triticum aestivum L.</u>	7. FAMILY NAME (Botanical) gramineae		FILING DATE <u>Mar. 13, 1989</u> TIME <u>10:45</u> <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.
8. KIND NAME Wheat	9. DATE OF DETERMINATION August 1989		FEES RECEIVED AMOUNT FOR FILING \$ <u>1800.00</u> DATE <u>Mar. 13, 1989</u> AMOUNT FOR CERTIFICATE \$ <u>200.00</u> DATE <u>Nov. 3, 1992</u>
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa			12. DATE OF INCORPORATION May 1926
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Mark Iwig Pioneer Hi-Bred International, Inc. P.O. Box 85 Johnston, Iowa 50131-0085 PHONE (Include area code): 515/270-3311			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.) d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No			
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT <u>Mark M. Iwig</u>		DATE <u>3/3/89</u>	
SIGNATURE OF APPLICANT		DATE	

14A. Exhibit A. Origin and Breeding History of Pioneer Wheat Cultivar 2548.

Pioneer cultivar 2548, Triticum aestivum L., em Thell., a soft red winter wheat was developed by Pioneer Hi-Bred International, Inc., from the single cross Pioneer line W727/Pioneer line W689. Pioneer line W727 was a selection from the cross: Hadden\*2/3/GA1123//Norin10-Brevor/Tenmarq/4/MoW6582/Redcoat. Pioneer line W689 was an F3 selection from the cross: Coker 68-15/4/Etoile de Choisy//Thorne/Clarkan/3/CI3390. A semidwarf mutant was selected from the Etoile de Choisy//Thorne/Clarkan cross. This mutant was crossed to CI3390. A pure line selection from this cross was crossed to Coker 68-15. Pioneer cultivar 2550 resulted from an F4 reselection of Pioneer line W689. The detailed parentage of 2548 is:

Hadden \*2/3/GA1123//Norine10-Brevor/Tenmarq/4/MoW6582/  
Redcoat/5/Coker 68-15/4/Etoile de Choisy//Thorne/Clarkan/  
3/CI3390.

The single cross of Pioneer W727/Pioneer W689 was made in the 1975 spring greenhouse cycle. The cross code WX11,804 was assigned. The seeds were planted in the fall of 1975 as a 3 foot F1 row in the Hutchinson, Kansas breeding nursery. F2 seed harvested from this row was planted in the fall of 1976 as a bulk population. Random heads were selected, threshed and bulked back together, and an F3 bulk population was planted at Windfall, Indiana. One hundred eighty eight heads were selected and individually threshed and planted in the fall of 1978 as F4 headrows in the breeding nursery at Windfall. One (designated THR 88-95) of the F4 headrows was selected and four heads were individually harvested before the row was harvested in bulk. The four heads were planted in the fall of 1979 as F5 headrows in the breeding nursery at Windfall. The bulk seed from one of the three

## 14A. Exhibit A. (con't)

selected rows was entered into preliminary yield trials and was later coded W0030. In 1981, W0030 was planted in bulk in a drill strip with 24 heads selected. The heads were individually threshed and planted in the fall of 1982 as F8 headrows, in the breeding nursery at Windfall. One (designated THR 260-88) of the F8 headrows was harvested and the bulk seed was planted in a preliminary yield trial in 1983. The selected row was assigned the code W0030E. W0030E has been tested in yield trials and for milling and baking quality since 1984. In 1985, an increase of W0030E in the F11 generation was killed but drill strip sources (0.006 acre from Windfall and 0.006 acre from St. Matthews, SC) were grown and rogued for purity. Seed harvested from these drill strips became part of the breeder's seed and was turned over to our parent seed personnel for further increase. In 1986 another increase (0.2 acre) of W0030E in the F12 generation was grown and rogued for purity. Seed harvested from this additional increase also became breeder's seed and was turned over to our parent seed personnel for further increase. Following the 1988 harvest, W0030E will be designated to be sold as Pioneer cultivar 2548.

2548 has shown uniformity and stability for all traits as described in Exhibit C (form LPGS-470-6) -- "Objective Description of Variety."

## 14B. Exhibit B. Novelty Statement

2548 is most similar to the Pioneer soft red winter wheat cultivar 2550. This is to be expected since the bulk that 2550 was selected from is genetically half of 2548. While 2548 resembles 2550 in some characteristics, there are a number of distinguishable differences between the two varieties. 2548 is 4% higher yielding than 2550 (Table 1). The test weight of 2548 averages 0.6 lbs/bu higher than 2550 (Table 1). 2548 is more resistant to leaf rust and powdery mildew than 2550 (Table 1). 2550 is more tolerant to soil borne mosaic virus than 2548 (Table 1). The plant height of 2548 is approximately 6 cm shorter than 2550. The heads of 2548 are awned and white at maturity, while 2550 is awnleted and yellow at maturity. The glumes of 2548 are medium in length and wide while 2550 glumes are long and wide. Phenol reaction of 2548 is ivory while 2550 is very dark brown. The average seed length for 2548 is 6 mm and for 2550 it is 7 mm.

U. S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, MEAT, GRAIN AND SEED DIVISION  
BELTSVILLE, MARYLAND 20785

EXHIBIT C  
(Wheat)

## OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Pioneer Hi-Bred International, Inc.	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 7301 N.W. 62nd Ave., P.O. Box 85 Johnston, IA 50131-0085	PVPO NUMBER 8900112
	VARIETY NAME OR TEMPORARY DESIGNATION 2548

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g.     or   ) when number is either 99 or less or 9 or less.

## 1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

## 2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify)   1 = SOFT 2 = HARD 3 = OTHER (Specify)

1 = WHITE 2 = RED 3 = OTHER (Specify)

## 3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING    LAST FLOWERING

## 4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN   1 = ARTHUR 2 = SCOUT 3 = CHRIS  
  NO. OF DAYS LATER THAN   4 = LEMHI 5 = NUGAINES 6 = LEEDS

## 5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH  
  CM. TALLER THAN    
  CM. SHORTER THAN   1 = ARTHUR 2 = SCOUT 3 = CHRIS  
4 = LEMHI 5 = NUGAINES 6 = LEEDS

## 6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

## 7. ANTHUR COLOR:

1 = YELLOW 2 = PURPLE

## 8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT  Waxy bloom: 1 = ABSENT 2 = PRESENT  
 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT  Internodes: 1 = HOLLOW 2 = SOLID  
  NO. OF NODES (Originating from node above ground)   CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

## 9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT  Hairiness: 1 = ABSENT 2 = PRESENT

## 10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify):   Flag leaf: 1 = NOT TWISTED 2 = TWISTED  
 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT  Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT  
  MM. LEAF WIDTH (First leaf below flag leaf)   CM. LEAF LENGTH (First leaf below flag leaf):

## 11. HEAD:

<input type="checkbox"/> 1	Density: 1 = LAX    2 = DENSE	<input type="checkbox"/> 1	Shape: 1 = TAPERING    2 = STRAP    3 = CLAVATE 4 = OTHER (Specify) _____
<input type="checkbox"/> 4	Awnedness: 1 = AWNLESS    2 = APICALLY AWNLETED    3 = AWNLETED    4 = AWNED		
<input type="checkbox"/> 1	Color at maturity: 1 = WHITE    2 = YELLOW    3 = PINK    4 = RED 5 = BROWN    6 = BLACK    7 = OTHER (Specify): _____		
<input type="checkbox"/> 0 <input type="checkbox"/> 8	CM. LENGTH	<input type="checkbox"/> 1 <input type="checkbox"/> 2	MM. WIDTH

## 12. GLUMES AT MATURITY:

<input type="checkbox"/> 2	Length: 1 = SHORT (CA. 7 mm.)    2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)	<input type="checkbox"/> 3	Width: 1 = NARROW (CA. 3 mm.)    2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)
<input type="checkbox"/> 2	Shoulder shape: 1 = WANTING    2 = OBLIQUE    3 = ROUNDED 4 = SQUARE    5 = ELEVATED    6 = APICULATE	<input type="checkbox"/> 3	Beak: 1 = OBTUSE    2 = ACUTE    3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☐ 1 1 = WHITE    2 = RED    3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT    2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☐ 2 1 = PROSTRATE    2 = SEMI-ERECT    3 = ERECT

## 16. SEED:

<input type="checkbox"/> 1	Shape: 1 = OVATE    2 = OVAL    3 = ELLIPTICAL	<input type="checkbox"/> 1	Check: 1 = ROUNDED    2 = ANGULAR
<input type="checkbox"/> 2	Brush: 1 = SHORT    2 = MEDIUM    3 = LONG	<input type="checkbox"/> 1	Brush: 1 = NOT COLLARED    2 = COLLARED
<input type="checkbox"/> 1	Phenol reaction (See instructions): 1 = IVORY    2 = FAWN    3 = LT. BROWN 4 = BROWN    5 = BLACK		
<input type="checkbox"/> 3	Color: 1 = WHITE    2 = AMBER    3 = RED    4 = PURPLE    5 = OTHER (Specify) _____		
<input type="checkbox"/> 0 <input type="checkbox"/> 6	MM. LENGTH	<input type="checkbox"/> 0 <input type="checkbox"/> 3	MM. WIDTH
		<input type="checkbox"/> 3 <input type="checkbox"/> 0	GM. PER 1000 SEEDS

## 17. SEED CREASE:

<input type="checkbox"/> 1	Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'	<input type="checkbox"/> 1	Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'
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## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 2	STEM RUST (Races) <u>Field Races</u>	<input type="checkbox"/> 2	LEAF RUST (Races) <u>Field Races</u>	<input type="checkbox"/> 0	STRIPE RUST (Races)	<input type="checkbox"/> 0	LOOSE SMUT
<input type="checkbox"/> 2	* POWDERY MILDEW * 1 in Southeast	<input type="checkbox"/> 0	BUNT	<input type="checkbox"/>	OTHER (Specify) _____		

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 0	SAWFLY	<input type="checkbox"/> 0	APHID (Bydv.)	<input type="checkbox"/> 0	GREEN BUG	<input type="checkbox"/> 0	CEREAL LEAF BEETLE
<input type="checkbox"/>	OTHER (Specify) _____		HESSIAN FLY	<input type="checkbox"/> 0	GP	<input type="checkbox"/> 0	A
			RACES:	<input type="checkbox"/> 0	D	<input type="checkbox"/> 1	E
				<input type="checkbox"/> 0	F	<input type="checkbox"/> 1	B
				<input type="checkbox"/> 0	G	<input type="checkbox"/> 0	C
				<input type="checkbox"/> 0	G	<input type="checkbox"/> 0	G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

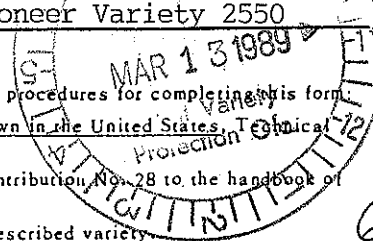
CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Pioneer Variety 2550	Seed size	Pioneer Variety 2551
Leaf size	Pioneer Variety 2550	Seed shape	Pioneer Variety 2550
Leaf color	Pioneer Variety 2550	Coleoptile elongation	Pioneer Variety 2550
Leaf carriage	Pioneer Variety 2550	Seedling pigmentation	Pioneer Variety 2550

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form.

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.



## 14D. Exhibit D. Additional Description of the Variety

Pioneer cultivar 2548 is a common soft red winter wheat,  
Triticum aestivum L.

Flowering date of 2548 is two days later than the variety Arthur and one day later than Pioneer cultivar 2555. At Windfall, Indiana, when seeded about October 1, average first flowering is May 27 or about 229 days after emergence. Last flowering normally averages about seven days later.

2548 has averaged 89 cm in height (Table 1), about 10 cm shorter than Arthur and 5 cm shorter than Pioneer cultivar 2555.

The plant color of 2548 at booting stage is blue green, similar to Pioneer cultivar 2550. The anther color of 2548 is yellow.

Anthocyanin has not been present on the stems. However, a waxy bloom is present on the stems. Internodes of 2548 are hollow and at maturity stems are yellow. Normally four stem nodes are present above ground and internode length between flag leaf and the leaf below is 19 cm. The last internode of the rachis is free of hairiness.

Auricles of 2548 are lacking in anthocyanin and free of hairiness.

Flag leaves are generally recurved at booting and not twisted. Hairs are absent from the first leaf sheath. A waxy bloom occurs on the flag leaf sheath. The first leaf below the flag leaf averages 11 mm wide and 23 cm long.

Spikes are generally lax, tapering, awned, and white at maturity. Awns range from 2 to 6 cm in length. Spike width and length averages 12 mm and 8 cm, respectively. However, spike width and length are variable with plant population and level of production.



## 14D. Exhibit D. (con't)

Glumes of 2548 are medium in length, wide, and generally with oblique shoulders. Beaks are acuminate and average 2 to 3 mm in length.

Coleoptile color is white and seedling anthocyanin is absent. Juvenile plant growth habit is semi-erect.

Kernels are red in color, ovate in shape, with rounded cheeks and a shallow crease. The brush is not collared and medium in size. Kernels average 7 mm long and 3 mm wide and weigh 30 g per 1000. Phenol reaction is ivory.

2548 is resistant to leaf rust (Puccinia recondita f. sp. tritici) races currently common in the soft red winter wheat region (Table 1). In 1986, 2548 showed resistance to field races of stem rust in Nebraska. 2548 has not been tested for specific races of stripe rust (P. striiformis), bunt (Tilletia foetida and T. caries), and loose smut (Ustilago tritici). It has been postulated that 2548 has leaf rust resistance genes, Lr3 and Lr11, and stem rust (P. graminis f. sp. tritici) resistance, Sr10, through seedling screens conducted by the Plant Disease Clinic at the University of Minnesota, St. Paul Minnesota, in cooperation with the USDA Cereal Rust Lab. 2548 has shown resistance to powdery mildew (Erysiphe graminis f. tritici) in the Corn Belt (Table 1). It is susceptible to powdery mildew in the Southeast US; however, the progression of the disease up the plant is slow. 2548 has fair resistance to spindle streak mosaic virus, and wheat streak mosaic virus, but is moderately susceptible to soil borne mosaic virus (Table 1).

2548 is susceptible to biotypes B and E of Hessian fly and has not been tested to biotypes GP, A, C, D and G. Hessian fly tests were

## 14D. Exhibit D. (con't)

conducted by the Small Grain Insect Pests Resistance Group, USDA-ARS, Department of Entomology, Purdue University, Lafayette, Indiana. 2548 has not been tested for sawfly, BYDV, green bug, or cereal leaf beetle.

2548 has an impressive yield record when compared with current soft red winter wheat cultivars (Table 1). Short plant height and good straw strength gives 2548 excellent resistance to lodging (Table 1). 2548's level of winterhardiness and drought tolerance is similar to 2550.

The milling and baking properties of 2548 are generally similar to most current soft red winter wheat cultivars (Table 2).

Table 1. Performance of Pioneer Cultivars 2548, 2555, 2551, and 2550 in Yield Trials. (1985-1988)

Trait	Loc/Exp	2548	2555	2551	2550
Yield (Bu/A)	100	78.2	79.7	74.3*	75.0*
Test Weight (lbs/bu)	93	57.8	57.4	56.1*	57.2*
Days to 50% Flowering After 1/1	20	131.5	130.4*	131.6	132.0
Height (cm)	33	88.6	94.2*	91.9*	94.7*
Lodging Score+	9	7.5	6.8#	7.7	6.6
Winterhardness+	17	6.4	5.9#	7.1*	6.5
Drought Tolerance+	3	4.3	2.3	2.7	5.3
Leaf Rust+	20	7.8	6.4*	7.4	6.4*
Leaf Blight+	11	5.2	4.0*	4.1*	4.7
Septoria Nodorum+	2	3.8	5.8*	4.0	5.0
Powdery Mildew+	5	8.6	5.7*	6.7*	6.8*
Spindle Streak Mosaic Virus+	6	6.5	8.9*	8.5*	7.4
Soil Borne Mosaic Virus+@	5	4.2	9.0*	7.6*	8.1*
Wheat Streak Mosaic Virus+	4	5.6	6.5	5.3	5.0

Yield trials were grown in eastern Kansas, Missouri, Illinois, Indiana, Ohio, and Michigan.

+Scale 1-9 where 9=excellent or resistant and 1=poor or 100% susceptible.

@ Data collected at the University of Illinois SBMV nursery.

\* Significant at 1% and # significant at 5% as compared to 2548.

Individual t-tests were calculated by the differences between observations of 2548 and other chosen varieties. Significance depends on the range of those differences.

Loc/Exp is an experiment grown at a location; different experiments may have been grown at the same location.

Table 2. Results of Quality Testing on 2548 (Pioneer Wheat Quality Lab).

Year/Sample	Flour Yield (%)	Break Flour (%)	Flour Protein (%)	AWRC (%)	Cookie Diam. (cm)	PSI (%)
1984 Data (2 reps)						
2548	71.7	39.4	7.9	52.7	19.3	13.2
Caldwell	73.4	44.3	7.6	51.8	19.5*	15.6
Avg. Check	71.1	40.0	8.2	53.3	19.1	15.1#
1985 Data (3 reps)						
2548	73.4	37.9	8.1	57.0	18.5	29.6
2550	72.5	36.7	7.9	55.9	19.2#	30.7
2555	75.3	42.1#	7.8	53.2	19.3	36.0
Caldwell	74.3	40.7	7.8	53.2#	18.8	31.1*
Avg. Check	73.0	38.2	7.9	55.2	19.0	30.7
1986 Data (3 reps)						
2548	73.1	36.1	8.9	57.8	18.8	32.8
2550	71.3	33.5	9.5	57.0	18.9	33.7
2555	74.3	38.8	8.6#	53.3#	20.0#	38.0#
Caldwell	73.4	40.0#	8.2#	53.6#	19.7#	38.7*
Avg. Check	72.1	35.9	9.1	55.6	19.2	35.3
1987 Data (4 reps)						
2548	70.5	37.9	8.4	55.2	19.1	29.4
2550	70.5	37.9	8.9	54.5	19.6	33.1
2555	71.9	41.7*	8.4	52.2	20.0#	36.6*
Avg. Check	70.7	38.8	8.8	53.5	19.7	32.9#

Locations tested include: Oden and Champaign, IL; Ft. Branch, Windfall, and Vallonia IN; Blissfield and Lake Odessa, MI.

\* Significant at 1% and # significant at 5% as compared to 2548. Individual t-tests were calculated by the differences between observations of 2548 and other chosen varieties. Significance depends on the range of those differences.

na. not available

Methods: Milling - Brabender Quadrumat Sr. Mill  
 Protein - NIR, Dickey-John GAC III  
 AWRC - Micro method on milled flour  
 Cookie Diameter - Total diameter of two cookies  
 PSI - AB grinder, sieve shaker

## 14E. Exhibit E. Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc., Plant Breeding Division, believes it is the sole, original and first breeder of the 2548 variety of soft red winter wheat for which it solicits a certification of protection.